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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,368	08/15/2003	Richard Bajan	(49521) 59234	2534

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EXAMINER

BAREFORD, KATHERINE A

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/642,368

Applicant(s)

BAJAN, RICHARD

Examiner

Katherine A. Bareford

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) 32 and 33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-31, drawn to a method, classified in class 427, subclass 446.
 - II. Claims 32-33, drawn to a product, classified in class 428, subclass 544+.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different process, such as casting or etching the substrate to roughen rather than using the water jet.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Mr. Wofsy on October 14, 2004 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-31. Affirmation of this election must be made by applicant in replying to this Office action. Claims 32-33 are

withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-2, 4-5 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Taylor et al (US 5743013).

Taylor teaches a method of applying a metallurgical coating to a superalloy substrate. Column 5, lines 25-40. A water jet of sufficient pressure is directed against the substrate for a time period sufficient to modify the surface morphology of the substrate to increase the surface roughness and volume at a microscopic and macroscopic level. Column 3, line 60 through column 4, line 15. A metallurgical coating can be deposited on the modified surface of the substrate by high velocity oxygen fuel spray. Column 5, lines 30-55 and column 8, lines 30-45.

Claim 2: the coating would have a thickness, which meets all the features of these claims since the coating can be up to and in excess of 0.5 inches. Column 5, lines 20-45.

Claims 4-5: the coated substrate can be heat treated in a vacuum. Column 6, lines 20-45.

Claim 9: the metallurgical coating can be an M Cr Al Y coating, where M is Co or Ni. Column 5, lines 30-45.

7. Claims 1-2 and 4-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Berry et al (US 6571472).

Berry teaches a method of applying a metallurgical coating to a superalloy substrate. Column 3, lines 30-40 and column 4, lines 60-68. A water jet of sufficient pressure is directed against the substrate for a time period sufficient to modify the surface morphology of the substrate to increase the surface roughness and volume at a microscopic and macroscopic level. Column 3 lines 1-35 (note lines 30-35, that the water jet alone can be used to roughen the surface). A metallurgical coating can be deposited on the modified surface of the substrate by high velocity oxygen fuel spray. Column 3, lines 30-60.

Claim 2: the coating would have a thickness, which meets all the features of these claims since the coating can be up to and in excess of 0.5 inches. Column 5, lines 5-15.

Claims 4-5: the coated substrate can be heat treated in a vacuum. Column 5, lines 10-20 and column 4, lines 20-25.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor et al (US 5743013).

Taylor teaches all the features of these claims, as discussed in the 35 USC 102(b) rejection above, except the pressure of the water jet.

However, Taylor does teach the typical water jet operates at 50,000 psi. Column 4, lines 1-10. Taylor also teaches that the water jet pressure and the nozzle traverse rate must be carefully controlled to avoid a too deep erosion. Column 4, lines 10-20.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Taylor to perform routine experimentation to optimize the water jet pressure in order to provide a desirably roughened surface, given that Taylor teaches typical operating pressure of a water jet and that the water jet pressure must be carefully controlled during operation to prevent too deep an erosion.

10. Claims 3, 10, 11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor as applied to claims 1-2, 4-5 and 9 above, and further in view of Hardee et al (US 5672394).

Taylor teaches all the features of these claims except grit blasting the surface of the substrate to increase surface roughness prior to treating the surface with a water jet.

However, Hardee teaches when applying a thermally sprayed coating to a metal substrate, it is desirable to roughen the substrate before coating. Column 3, lines 35-40, column 4, lines 15-30 and column 5, lines 10-30. A desirable roughening, is by first grit blasting the surface and then following the grit blasting with an etching or water blasting to provide the desirable roughened surface. Column 6, lines 50-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Taylor to perform grit blasting followed by water blasting as suggested by Hardee in order to provide a desirably roughened surface, because Taylor teaches roughening a surface before thermal spraying using a water jet to produce a fine roughening and Hardee teaches roughening a surface before thermal spraying by first using a grit blasting and then using a water jet to produce a final surface to be thermally sprayed.

11. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor as applied to claims 1-2, 4-5 and 9 above, and further in view of Arnold et al (US 5956845).

Taylor teaches all the features of this claim, including heat treatment, except that the heat treatment includes hot isostatic pressing.

However, Arnold teaches applying a thermally sprayed coating to a metal substrate, such as a turbine blade. Column 1, lines 10-30 and column 11, lines 30-68. A roughened substrate can be provided. Column 4, lines 40-50. A desirable coating is then applied to the workpiece

substrate by HVOF spraying. Column 4, lines 40-65. After the coating is applied a desirable bond to the substrate is provided by subjecting the coated workpiece substrate to hot isostatic pressing. Column 5, lines 5-15.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Taylor to perform hot isostatic pressing of the coated substrate as suggested by Arnold in order to provide a desirably coated and bonded surface, because Taylor teaches coating a substrate such as a turbine blade by thermal spraying and Arnold teaches that when coating a substrate such as a turbine blade by thermal spraying it is desirable to heat treat the coated substrate by hot isostatic pressing in order to provide a desirably bonded coating.

12. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor in view of Hardee as applied to claims 3, 10, 11 and 14 above, and further in view of Arnold et al (US 5956845).

Taylor in view of Hardee teaches all the features of this claim, including heat treatment, except that the heat treatment includes hot isostatic pressing.

However, Arnold teaches applying a thermally sprayed coating to a metal substrate, such as a turbine blade. Column 1, lines 10-30 and column 11, lines 30-68. A roughened substrate can be provided. Column 4, lines 40-50. A desirable coating is then applied to the workpiece substrate by HVOF spraying. Column 4, lines 40-65. After the coating is applied a desirable bond to the substrate is provided by subjecting the coated workpiece substrate to hot isostatic pressing. Column 5, lines 5-15.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Taylor in view of Hardee to perform hot isostatic pressing of the coated substrate as suggested by Arnold in order to provide a desirably coated and bonded surface, because Taylor in view of Hardee teaches coating a substrate such as a turbine blade by thermal spraying and Arnold teaches that when coating a substrate such as a turbine blade by thermal spraying it is desirable to heat treat the coated substrate by hot isostatic pressing in order to provide a desirably bonded coating.

13. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor as applied to claims 1-2, 4-5 and 9 above, and further in view of WO 02/40745 (hereinafter '745).

Taylor teaches all the features of this claim except depositing a platinum aluminide metallurgical coating onto the surface of the substrate.

However, '745 teaches applying a thermally sprayed coating to a gas turbine components. See page 1, lines 1-5 and page 9, lines 15-25. A bond coating can be applied to the substrate by thermal spraying. Page 6, lines 10-25, page 9, lines 15-25 and page 10, lines 5-10. The bond coating can be platinum aluminide or a M Cr Al Y. Page 6, lines 10-20, page 9, lines 15-25 and page 10, lines 5-10.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Taylor to use a platinum aluminide bond coating as suggested by '745 in order to provide a desirable bond coating, because Taylor teaches that a bond coating can be applied and that the bond coating can be a M Cr Al Y type coating applied by thermal spraying and '745

teaches that when applying a bond coating by thermal spraying it is desirable to use M Cr Al Y or platinum aluminide.

14. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor in view of Hardee as applied to claims 3, 10, 11, 14 above, and further in view of WO 02/40745 (hereinafter '745).

Taylor in view of Hardee teaches all the features of this claim except depositing a platinum aluminide metallurgical coating onto the surface of the substrate.

However, '745 teaches applying a thermally sprayed coating to a gas turbine components. See page 1, lines 1-5 and page 9, lines 15-25. A bond coating can be applied to the substrate by thermal spraying. Page 6, lines 10-25, page 9, lines 15-25 and page 10, lines 5-10. The bond coating can be platinum aluminide or a M Cr Al Y. Page 6, lines 10-20, page 9, lines 15-25 and page 10, lines 5-10.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Taylor in view of Hardee to use a platinum aluminide bond coating as suggested by '745 in order to provide a desirable bond coating, because Taylor in view of Hardee teaches that a bond coating can be applied and that the bond coating can be a M Cr Al Y type coating applied by thermal spraying and '745 teaches that when applying a bond coating by thermal spraying it is desirable to use M Cr Al Y or platinum aluminide.

15. Claims 15, 18-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor as applied to claims 1-2, 4-5 and 9 above, and further in view of Darolia (US 6607611).

Taylor teaches all the features of these claims except roughening the surface of the first coating (the bond coating) prior to applying the second coating (the ceramic coating). See column 5, lines 5-45. Taylor teaches that the ceramic coating can be a zirconia coating with 7-8% yttria. Column 5, lines 20-30.

However, Darolia teaches applying a thermally sprayed bond coating to a metal substrate, and then applying a thermally sprayed, such as by plasma spraying, ceramic coating. Column 1, line 60 through column 2, line 25, column 5, line 55 through column 6, line 5 and column 15-30. The bond coating is roughened prior to applying the ceramic coating. Column 6, lines 10-20.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Taylor to roughen the bond coat prior to applying the ceramic coating as suggested by Darolia in order to provide a desirably bonded coating, given that Taylor teaches applying a bond coat followed by a ceramic top coat and Darolia teaches that when providing a bond coat followed by a ceramic top coat, it is desirable to also roughen the bond coat before applying the top coat. It would further have been obvious to perform this roughening by the water jet method of Taylor, because Darolia teaches that the bond coat can be roughened by a method such as grit blasting, and Taylor provides benefits of using a water jet rather than grit blasting when roughening a surface prior to coating.

16. Claim 16 rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor in view of Darolia as applied to claims 15, 18, 19 and 21 above, and further in view of Hardee et al (US 5672394).

Taylor in view of Darolia teaches all the features of this claim except grit blasting the surface of the substrate to increase surface roughness prior to treating the surface with a water jet.

However, Hardee teaches when applying a thermally sprayed coating to a metal substrate, it is desirable to roughen the substrate before coating. Column 3, lines 35-40, column 4, lines 15-30 and column 5, lines 10-30. A desirable roughening, is by first grit blasting the surface and then following the grit blasting with an etching or water blasting to provide the desirable roughened surface. Column 6, lines 50-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Taylor in view of Darolia to perform grit blasting followed by water blasting as suggested by Hardee in order to provide a desirably roughened surface, because Taylor in view of Darolia teaches roughening a surface before thermal spraying using a water jet to produce a fine roughening and Hardee teaches roughening a surface before thermal spraying by first using a grit blasting and then using a water jet to produce a final surface to be thermally sprayed.

17. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor in view of Darolia as applied to claims 15, 18, 19 and 21 above, and further in view of WO 02/40745 (hereinafter '745).

Taylor in view of Darolia teaches all the features of this claim except depositing a platinum aluminide metallurgical coating onto the surface of the substrate.

However, '745 teaches applying a thermally sprayed coating to a gas turbine components. See page 1, lines 1-5 and page 9, lines 15-25. A bond coating can be applied to the substrate by thermal spraying. Page 6, lines 10-25, page 9, lines 15-25 and page 10, lines 5-10. The bond coating can be platinum aluminide or a M Cr Al Y. Page 6, lines 10-20, page 9, lines 15-25 and page 10, lines 5-10.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Taylor in view of Darolia to use a platinum aluminide bond coating as suggested by '745 in order to provide a desirable bond coating, because Taylor in view of Darolia teaches that a bond coating can be applied and that the bond coating can be a M Cr Al Y type coating applied by thermal spraying and '745 teaches that when applying a bond coating by thermal spraying it is desirable to use M Cr Al Y or platinum aluminide.

18. Claim 17, 22-24, 26-27 and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor in view of Darolia as applied to claims 15, 18, 19 and 21 above, and further in view of Arnold et al (US 5956845).

Taylor in view of Darolia teaches all the features of these claims, including heat treatment, except (1) that a three layer coating system is used, and (2) that the heat treatment includes hot isostatic pressing and is prior to the second layer application (claim 22, 23, 30, 31).

However, Arnold teaches applying a thermally sprayed coating to a metal substrate, such as a turbine blade. Column 1, lines 10-30 and column 11, lines 30-68. A roughened substrate can be provided. Column 4, lines 40-50. A desirable coating is then applied to the workpiece substrate by HVOF spraying. Column 4, lines 40-65. After the coating is applied a desirable bond to the substrate is provided by subjecting the coated workpiece substrate to hot isostatic pressing. Column 5, lines 5-15. The coating of Arnold provides for a method of repairing a substrate such as a turbine blade by coating with a metal alloy of the same material as the substrate so as to build the substrate back to its original dimensions. Column 11, lines 15-68.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Taylor in view of Darolia to provide a repair of a substrate, by coating an initial layer of material the same as the substrate and including performing hot isostatic pressing of the initially coated substrate, before applying the bond coating and ceramic top coating as suggested by Arnold in order to provide a desirably repaired, coated and bonded surface, because Taylor in view of Darolia teaches coating a substrate such as a turbine blade by thermal spraying with a bond coat and ceramic top coat and Arnold teaches that it is desirable to repair a turbine blade by coating an initial layer of material the same as the substrate and including performing hot isostatic pressing of the initially coated substrate. This would provide the application of a first metal layer with hot isostatic pressing to repair the substrate, followed by a second metal layer of bond coat, followed by a third ceramic layer in order to protect the repaired substrate.

19. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor in view of Darolia and Arnold as applied to claims 17, 22-24, 26-27 and 29-31 above, and further in view of Hardee et al (US 5672394).

Taylor in view of Darolia and Arnold teaches all the features of this claim except grit blasting the surface of the substrate to increase surface roughness prior to treating the surface with a water jet.

However, Hardee teaches when applying a thermally sprayed coating to a metal substrate, it is desirable to roughen the substrate before coating. Column 3, lines 35-40, column 4, lines 15-30 and column 5, lines 10-30. A desirable roughening, is by first grit blasting the surface and then following the grit blasting with an etching or water blasting to provide the desirable roughened surface. Column 6, lines 50-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Taylor in view of Darolia and Arnold to perform grit blasting followed by water blasting as suggested by Hardee in order to provide a desirably roughened surface, because Taylor in view of Darolia and Arnold teaches roughening a surface before thermal spraying using a water jet to produce a fine roughening and Hardee teaches roughening a surface before thermal spraying by first using a grit blasting and then using a water jet to produce a final surface to be thermally sprayed.

20. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor in view of Darolia and Arnold as applied to claims 17, 22-24, 26-27 and 29-31 above, and further in view of WO 02/40745 (hereinafter '745).

Taylor in view of Darolia and Arnold teaches all the features of this claim except depositing a platinum aluminide metallurgical coating onto the surface of the substrate.

However, '745 teaches applying a thermally sprayed coating to a gas turbine components. See page 1, lines 1-5 and page 9, lines 15-25. A bond coating can be applied to the substrate by thermal spraying. Page 6, lines 10-25, page 9, lines 15-25 and page 10, lines 5-10. The bond coating can be platinum aluminide or a M Cr Al Y. Page 6, lines 10-20, page 9, lines 15-25 and page 10, lines 5-10.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Taylor in view of Darolia and Arnold to use a platinum aluminide bond coating as suggested by '745 in order to provide a desirable bond coating, because Taylor in view of Darolia and Arnold teaches that a bond coating can be applied and that the bond coating can be a M Cr Al Y type coating applied by thermal spraying and '745 teaches that when applying a bond coating by thermal spraying it is desirable to use M Cr Al Y or platinum aluminide.

21. The Examiner notes that Dietrich et al (US 2004/0043261) is the ^{U.S.} national state ⁹ application of WO 02/40745 cited above.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:30-4:00) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck can be reached on (571) 272-1415. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


KATHERINE BAREFORD
PRIMARY EXAMINER